

EXHIBIT 10

REDACTED

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS

STATE OF TEXAS et al.,
Plaintiffs

vs.

GOOGLE LLC,
Defendant

Case Number 4:20-cv-00957

EXPERT REBUTTAL REPORT OF JEFFREY S. ANDRIEN

SEPTEMBER 9, 2024

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5. In addition, it is my understanding that document productions remain ongoing, and that Google and third-parties may produce additional documents in this matter. I further understand that in a parallel case pending in the Eastern District of Virginia, witnesses for Google, the United States Department of Justice, and other plaintiffs will offer expert and fact witnesses to testify in that trial. Accordingly, I reserve the right to review and rely on any additional documents and testimony in conducting my analyses and forming my opinions and conclusions in this case. I reserve the right to supplement or amend this report should my opinions change or need supplementation as a result of my ongoing review of documents and/or testimony.

II. SUMMARY OF OPINIONS

6. After reviewing the Wiggins Report and the Skinner Report, my expert opinions as presented in my Opening Report remain unchanged. To the extent that certain comments or criticisms cause me to alter any of my analyses, I note those in this report; however, any such alterations do not change my overarching conclusions as expressed in my Opening Report, including but not limited to my conclusions regarding the total penalty amounts necessary to have a deterrent effect on Google in the event it is found liable for the alleged misconduct.

7. With regards to the Wiggins Report, I hold the following opinions:

- a. The Wiggins Report misrepresents the reliable, generally accepted methodology I used and ignores the factors I considered in determining the ranges of statutory penalties proposed in my Opening Report. This misunderstanding alone undermines and invalidates his critiques. Additionally, the conclusions and criticisms of the reliable, generally accepted methodology I employed are based on Professor Wiggins' own flawed methodology that is inconsistent with the record produced in this case, including Google's own documents and testimony, as well as economic literature.

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- i. As explained below, I used a reliable, generally accepted methodology in my analyses and calculations of statutory penalties in my Opening Report. I have taught these techniques at both the graduate and undergraduate levels and used such analyses to develop my opinions in numerous cases throughout my career. None of the opinions I have expressed based on these methodologies have ever been excluded by the courts.
- ii. I employed a methodology that used a non-linear and holistic approach to assessing penalties.
- iii. Given the non-linear and holistic nature of the approach I use to determine penalties, even if the finder of fact determines that violation counts should be reduced as proposed in the Wiggins Report (reductions which, in my opinion are incorrect, but still retain tens of billions of violations), the appropriate total penalty amounts for Google's deceptive misconducts should be no less than the lower bounds expressed herein and in my Opening Report, and, as I wrote in my Opening Report, at the determination of the finder of fact, could be *even higher* than the upper bounds presented in my Opening Report.

b. The penalties analysis in the Wiggins Report is contradicted by the economic literature on deterrence and does not appropriately assess the amount necessary to deter improper conduct.

- i. The Wiggins Report's assertion that the amount of the penalty should be limited to Google's incremental benefits from the alleged misconduct is contradicted by the economic literature on deterrence. This literature establishes that because the probability of detection is less than 100 percent, to establish deterrence, the penalty,

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penalty, Google will retain a financial incentive to continue engaging in the misconduct and simply view the penalty as a cost of doing business. **One way to frame the appropriate amount to deter future bad behavior is to consider an approach that penalizes Google for at least the benefits it gained associated with the alleged misconduct. However, there are three issues to note with this approach.**

First, while the Plaintiff States' deceptive trade practices statutes have caps on the amount of the penalty per violation, **these statutes do not limit the penalty amount to the financial benefits from the misconduct. Therefore, the penalty amount per violation can exceed the amount of financial benefit generated by the misconduct**, as long as the penalty amount is within the penalty cap specified in each Plaintiff State's deceptive trade practices statute.

Second, if the defendant may continue to enjoy future benefits from the alleged misconduct, the historical benefits may not capture the total benefit from the misconduct. **Limiting the penalty only to historical benefit in such cases would fail to deter future violations because the misconduct would still be beneficial.**

Third, even a penalty equal to the entire amount of financial benefit from the alleged misconduct may be insufficient to completely eliminate a defendant's financial incentive to engage in future misconduct. This is because if the penalty amount is limited to only the amount of the historical financial benefits associated with the misconduct, the expected value of engaging in future misconduct may still be positive if a defendant perceives that there is a less than 100 percent probability that it will be caught and found liable for future misconduct and/or perceives some other ancillary, indirect, or intangible benefit by engaging in the misconduct.⁴

a. The Methodology Used in My Opening Report is Reliable and Generally Accepted

11. I used a reliable, generally accepted methodology to calculate statutory penalties in my Opening Report. As stated in my Opening Report, my analysis of the statutory penalties that

⁴ Andrien Opening Report, ¶¶106-107.

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should be assessed against Google is primarily based on an analysis of three factors: (1) the amount necessary to deter future misconduct; (2) the history of past violations; and (3) the ability of the offending party to pay a penalty.⁵ For some Plaintiff States, these factors are defined in their statutes (e.g. Texas, Utah). For others, I am advised by counsel that these factors are recognized in case law (e.g. South Carolina). As set forth in my Opening Report, the penalty range I propose is based on a holistic approach that considers all three economic factors that I evaluate using reasonable, reliable, and generally accepted economic principles and methodologies, which I discuss in more detail below.⁶ Therefore, even when the text of a particular Plaintiff State statute does not expressly list factors, it is my opinion that these three factors are still appropriate to consider. Furthermore, I explicitly listed several additional relevant factors that a trier of fact may consider in assessing penalty amounts different from what I proposed—including the bad faith of the defendant, the duration and extent of the defendant's unlawful conduct, active concealment of information by the defendant, the defendant's awareness of the unfair, deceptive, or illegal nature of their conduct, and any other matters that justice may require.⁷

12. Professor Wiggins' contention that my proposed per penalty amounts lack an economic basis is incorrect.⁸ In my Opening Report, I set forth the economic bases for my proposed per-penalty amounts, which are based on a variety of economic literature and theories related, in part, to deterrence.⁹ As I explained in my Opening Report, one guiding principal underlying my framework regarding proposed per-penalty amounts is the deterrence factor considered in assessing the total amount of civil penalties, as well as the related factors addressing the economic

⁵ Andrien Opening Report, ¶7.

⁶ Andrien Opening Report, ¶11.h.

⁷ See, e.g., Andrien Opening Report, ¶¶7, 11(g)-(h), 58, 64-65, 69-70, 72-75, 103.

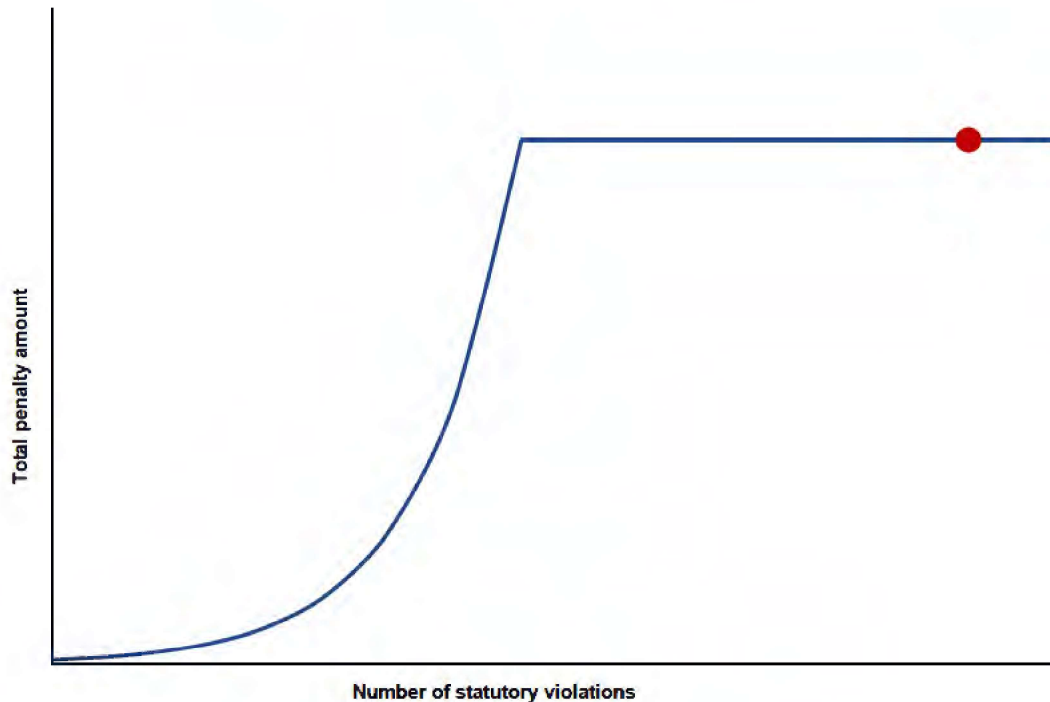
⁸ Wiggins Report, ¶167.

⁹ Andrien Opening Report, § IV.F.

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associated with Google's violation counts. **Figure 2**, below, puts this concept into the context of overall penalty amounts.

FIGURE 2



Source: DeRamus Report, Figure 1. Addition of red dot is my own.

20. Figure 2 demonstrates that there is a point where the curve largely flattens out because the number of violations has become so significant that the penalty at the higher end of my proposed range (or something very close to it) must be imposed in order to ensure deterrence. My penalty range was based upon a maximum violation count of 29 trillion, which places Google well out to the right of the curve, as depicted (in the abstract) by the red dot. While I maintain that the violation counts I calculated in my Opening Report are correct – and even conservative – Professor Wiggins' violation counts still accuses Google of committing *tens of billions* of DTPA violations (*hundreds of billions* in the case of the Bernanke misconduct).²⁰ Regardless of the

²⁰ Wiggins Report, Table C4.

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number of violations in this matter is either (a) *all* auctions or (b) some calculated subset of these numbers, the total count is so high that the red dot remains on the flattened part of the curve and the appropriate penalty for Google remains at or near an appropriate deterrent level, even as the number of violations changes. Thus, under this model, which follows the generally accepted economic theory on deterrence I discuss more fully below, the amount per violation will not necessarily linearly change should the number of violations change.

21. Additionally, the Wiggins Report does not articulate any opposing methodology, nor does it explain why the generally accepted methodology I employed in my Opening Report is not reliable or acceptable; indeed, the Wiggins Report adopts the calculated amounts for reductions without any adjustment, even though the Wiggins Report acknowledges that the statutory range is far in excess (up to \$10,000 per violation for some states and even greater in others)²¹ of the \$0.00025-\$0.00075 range I opined was appropriate for misconduct that resulted in 29 trillion violations. Nor does the Wiggins Report contain any meaningful methodology, discussion, or explanation of the relevant factors to consider in determining statutory civil penalties, and he wholly ignores the importance of deterrence in assessing such penalties. In fact, it does not appear that Professor Wiggins made any attempt to understand the relevant factors to consider – his list of materials considered does not mention any of the relevant statutes or applicable cases, and he also does not mention any instructions or explanations provided to him by counsel.

22. The Wiggins Report appears to ignore that my opinions are focused on the *total penalty amounts* necessary to deter future misconduct,²² and should the trier of fact determine that the *total violation count* is less than I assume, I have seen no basis—including the flawed analysis

²¹ See, e.g., Andrien Opening Report, Table 3.

²² See, e.g., Andrien Opening Report, ¶7 (emphasis added); see also, ¶11(f) (“To deter Google from continuing its misconduct, the *penalty* must eliminate Google’s financial incentive to engage in the misconduct.”)

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term benefits from their actions, which are not fully reflected in an analysis of direct incremental benefits. Given the body of academic literature I have reviewed, the likely incomplete production of all relevant evidence by Google, and the complexity of the underlying auction mechanics, it is logical that the probability of detection is low in this instance.⁷⁹ In the parlance of the economic theory of deterrence, if the probability of detection is relatively low, the optimal fine for deterrence should be high.

C. The Wiggins Report Contains an Incorrect Assessment of Google’s Benefit from Its Misconduct

a. The Wiggins Report’s Incremental Profit Analysis is Flawed and Unreliable

41. The Wiggins Report undertakes a purported “direct assessment” of Google’s incremental benefits from the alleged deception of each program. As I discussed above, while this may be a consideration for determining an appropriate penalty under a holistic approach, Professor Wiggins’ analysis is nevertheless flawed and unreliable.

42. The Wiggins Report states that in undertaking his purported “direct assessment,” he “emphasize[s] that benefits from the alleged deception are conceptually different from benefits from the programs in question.”⁸⁰ The Wiggins Report performs an assessment in two ways: first by conceptually addressing “the extent to which Google profited from the alleged deception about each program,” and second by performing “an empirical analysis that assumes that advertisers and publishers do not learn and adapt their strategies in response to the feedback they receive in the marketplace.”⁸¹

⁷⁹ See also DeRamus Report, § VI.B.

⁸⁰ Wiggins Report, ¶184.

⁸¹ Wiggins Report, ¶185.

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difficulty of this task, he is similarly silent about it in his report. In other words, while Google admits that an evaluation of incremental benefits might not even be possible, and that it does not maintain the data necessary to precisely determine the number of auctions directly affected by, the revenues and profits associated with, or the additional value it gained through its auction manipulation programs, the Wiggins Report appears to completely disregard these facts. To that end, Professor Wiggins' failure to reconcile his purported "direct assessment of Google's benefits" to the representations and testimony of Google and its personnel renders his analysis speculative and unreliable.

ii. *The Wiggins Report's Calculations Contradict Information Regarding the Incremental Benefits of the Programs Provided by Google's Own Personnel*

55. Below, I provide examples of how the Wiggins Report's estimates of incremental profit related to Google's misconduct contradict information on the incremental benefits of this conduct as provided by Google's own personnel. As I explained in my Opening Report, I find that Google's internal estimates are unreliable and insufficient to support an analysis of the direct benefit of the misconduct to Google;¹⁰³ however, the fact that the Wiggins Report's proffered results are lower than some of these incomplete estimates and that he has not done any analysis to account for these variances show that his calculations are unreliable.

56. Regarding Bernanke, the Wiggins Report calculates that Google's increase in gross revenue attributable to the conduct was \$[REDACTED] from November 2013 to October 2019 (a

¹⁰³ Andrien Opening Report, footnote 285 ("There are documents in the record that provide estimates of the direct monetary impact related to Google's misconduct. When asked to provide 'Google's revenue and profits attributable to such Google Auction Mechanic' Google has stated that [REDACTED] See Declaration of [REDACTED] in Support of Defendant Google LLC's Responses to Plaintiffs' Third Set of Interrogatories, May 24, 2024. Google has not undertaken this process. Thus, I find these limited documents unreliable and insufficient to support an analysis of the direct benefit of the misconduct to Google. Further, as I describe herein, Google's benefit from the misconduct is not limited to the direct monetary benefit of each misconduct.")

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period of 5 years and 10 months).¹⁰⁴ This calculation averages out to approximately \$ [REDACTED] in incremental gross revenue per year. In contrast to the Wiggins Report's calculation, Google prepared an internal presentation nearly two years after the launch of Project Bernanke in August 2015 which noted that the program [REDACTED]

[REDACTED]¹⁰⁵ Although not clear from the document itself, I conservatively estimate that this [REDACTED]

[REDACTED]¹⁰⁶

57. The Wiggins Report's estimated [REDACTED]. Professor Wiggins' failure to reconcile his estimated incremental benefits with Google's own internal estimate renders his calculations speculative and unreliable.

58. Regarding RPO, the Wiggins Report estimates that [REDACTED]
[REDACTED]
[REDACTED]¹⁰⁷ This calculation, once again, contradicts estimates from Google personnel, in this case, Nitish Korula, a Senior Technical Adviser and Google employee for approximately 14 years, who from July 2016 through December 2021, was a lead for "engineering teams developing Google products that allow publishers to sell

¹⁰⁴ Wiggins Report, ¶¶334-347. The computation of 5 years and 10 months does not include the starting and ending months consistent with the methodology in the Opening Report and Professor Wiggins' backup.

¹⁰⁵ GOOG-DOJ-28385887 at -895, -907.

¹⁰⁶ I attribute the [REDACTED] revenue to Plaintiff States via two steps. First, I assume that the revenue applies to Google's global operations, and [REDACTED]. Second, I multiply the resulting United States revenue amount by 28.7%, which is the average of the ratio of each Plaintiff State's internet population to that of the United States as a whole from 2013-2023. Upon review, I found that the state allocation figure presented in my Opening Report (28.9%) had incorrectly accounted for Puerto Rico's internet population. The adjusted state allocation figure is 28.7%. This adjustment also affects my original violation counts. I provide updated violation counts based on this adjustment in the exhibits to this report.

¹⁰⁷ Wiggins Report, ¶¶304-318.

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display advertising inventory, including Google Ad Manager.”¹⁰⁸ During the deposition of Mr. Korula, he [REDACTED]

[REDACTED]¹⁰⁹ [REDACTED]
[REDACTED]

[REDACTED]¹¹⁰

59. The Wiggins Report’s \$ [REDACTED]

[REDACTED] As with the Bernanke example, Professor Wiggins is again silent as to Google’s own documents and testimony, which he did not consider. Accordingly, Professor Wiggins’ failure to reconcile his estimated incremental benefits with Google’s own internal estimates render his calculations speculative and unreliable.

iii. The Wiggins Report’s Calculations Do Not Account for the Significant Indirect Benefits Derived by Google from Violating DTPA Statutes

60. As discussed in the next section, Google accrued numerous indirect benefits from violating the DTPA statutes, none of which are accounted for in the Wiggins Report’s incremental profit calculations. For example, Google’s misconduct provides funds which could be used for additional employees, improvements in technology, or to improve the company’s relative position in the industry.¹¹¹ Google’s misconduct also results in indirect network effects that serve as barriers to entry against competitors and create difficulties for competitors trying to compete with Google’s

¹⁰⁸ See GOOG-AT-MDL-008842393; Declaration of Nitish Korula, August 4, 2023, ¶1.

¹⁰⁹ Deposition of Nitish Korula, July 12, 2024 at 190:2-23.

¹¹⁰ I attribute the [REDACTED] First, I assume that the revenue applies to Google’s global operations, and [REDACTED]

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¹¹¹ See § III.C.b.

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dominant display advertising position.¹¹² Further, increased AdX win rates and revenue from the deceptive misconduct results in attracting more publishers and advertisers to Google's platform, furthering Google's dominance.¹¹³ Finally, as Google grows and dominates the display advertising market by way of the alleged misconduct, Google aims to use the data gathered along the way to enhance and grow its other offerings, [REDACTED].¹¹⁴ Professor Wiggins does not consider any of these indirect benefits in his incremental profits calculation. Because he does not identify and isolate the impacts of the misconducts in all the other areas of Google's business, his incremental profit calculations are speculative and unreliable.

b. The Wiggins Report Disregards the Significant Indirect Benefits Derived by Google from Violating DTPA Statutes

61. The Wiggins Report claims that "There are no indirect benefits that would justify higher DTPA penalties."¹¹⁵ However, this response fails for myriad reasons.

62. First, the Wiggins Report suggests that "indirect network effects" that serve as barriers to entry against competitors are irrelevant as they do "not relate to the alleged deception."¹¹⁶ Interestingly, Professor Wiggins does not dispute the underlying notion that these indirect network effects would indeed serve as barriers to entry against competitors. Professor Wiggins misses the fact that, due to indirect network effects, increased AdX win rates and revenue from the deceptive DTPA misconducts results in attracting more publishers and advertisers to Google's platform, furthering Google's dominance. The Plaintiff States' allegations in this case include antitrust claims in addition to the DTPA claims. While separate and distinct, these allegations relate in some ways to similar conduct (for example, Project Bernanke) and in the sense

¹¹² See § III.C.b.

¹¹³ See § III.C.b.

¹¹⁴ See § III.C.b.

¹¹⁵ Wiggins Report, p. 122.

¹¹⁶ Wiggins Report, ¶264.

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that each type of misconduct has the ability to enhance the other. Google references this phenomenon in its internal documents. In its “DRX” section of a DVAA report, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] p.117

63. Additionally, as Google grows and dominates the display advertising market by way of the alleged DTPA misconducts, Google uses data gathered along the way to enhance and grow its other offerings. For example, in [REDACTED]

[REDACTED]

[REDACTED].¹¹⁸

Specifically, a Google strategy paper states “[REDACTED]

[REDACTED]

[REDACTED]”¹¹⁹ Thus, Google makes clear its intention to use data from its Ad Tech business to bolster its broader advertising business.

64. The Wiggins Report also disregards that my opinions with respect to AdX win rates and revenue, as well as indirect network effects, are informed by the opinions of Dr. Weinberg and Dr. Gans. To wit, Dr. Weinberg opines that the benefit to Google from RPO, DRS and Project Bernanke included increased AdX win rates and revenue, as well as decreased win rates and revenues for non-AdX exchanges.¹²⁰ Dr. Gans states, “a positive feedback loop can lead to market

¹¹⁷ GOOG-TEX-00124296 at -503.

¹¹⁸ GOOG-TEX-00124296 at -319.

¹¹⁹ GOOG-TEX-00124296 at -319.

¹²⁰ Expert Report of Matthew Weinberg, June 7, 2024 (“Weinberg Report”), § 7.E.; § 8.F, § 9.C. I note that Dr. Weinberg observes that the effect of RPO on the AdX win rate may be ambiguous as it depends on the effectiveness of the program because RPO has certain offsetting factors on auction win rates. However, according to Dr. Weinberg, it is reasonable to expect Google, a sophisticated seller with access to significant amounts of data, to be achieve this. Google documents indicate Dr. Weinberg’s intuition is correct. Not only did Google expect to RPO to

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dominance.”¹²¹ Dr. Gans continues, saying that “In the presence of strong network effects, a firm that controls a widely adopted product or platform may be able to maintain its market position even in the face of competition, as users may be reluctant to switch to a rival product with a smaller user base.”¹²² Finally, Dr. Gans states “This can create barriers to entry for new competitors and allow the incumbent firm to exercise market power by raising prices, reducing quality, or limiting innovation.”¹²³

65. Second, the Wiggins Report disregards the substantial indirect benefits which accrued to Google over the relevant timeframe. While I do reference in my report certain historical acquisitions by Google (e.g., DoubleClick for \$3.1 billion in 2008, Invite Media for \$81 million in 2010, and Admeld for \$400 million in 2011)¹²⁴ which occurred prior to the deceptive acts at issue in this case, these acquisitions are properly viewed within the context of an overall scheme by Google to dominate and maintain its place in the display advertising industry.

66. For example, Google’s DoubleClick acquisition included the publisher ad server DoubleClick for Publishers (“DFP”) and a nascent ad exchange (which became AdX)¹²⁵ – in 2018

increase its revenues and profits, but it was, in fact, successful in deploying RPO effectively. For example, a June 2014 document prior to RPO’s launch estimated “Google profit up [REDACTED], GDN profit up [REDACTED].” See GOOG-DOJ-AT-02634336 at -337. Another pre-launch document estimated that “the expected impact [of RPO] is [REDACTED].” See GOOG-NE-06591119 at -119. Documents from November 2015 to February 2017 estimate that RPO could be associated with an [REDACTED] revenue gain. See GOOG-NE-04719370 at -370-371; GOOG-AT-MDL-B-001114919 at -919; GOOG-DOJ-15435288 at -289; GOOG-DOJ-15428245 at -245; GOOG-DOJ-14144983 at -984; GOOG-NE-06842715 at -718; GOOG-DOJ-29803801 at -802; GOOG-NE-13229114 at -114.

¹²¹ Expert Report of Dr. Joshua Gans, June 7, 2024 (“Gans Report”), ¶304. [REDACTED]

¹²² Gans Report, ¶304.

¹²³ Gans Report, ¶304. For reference, further discussion of how Google’s misconduct enhanced its monopoly power in one or more markets can be found in the Gans Report, ¶859.

¹²⁴ How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

¹²⁵ “Google Buys DoubleClick for \$3.1 Billion,” The New York Times, April 14, 2007, available at <https://www.nytimes.com/2007/04/14/technology/14DoubleClick.html>, accessed 8/21/2024.

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the two products merged under the Google Ad Manager (“GAM”) umbrella.¹²⁶ I understand that Dr. Gans concludes that Google has monopoly power in both the market for publisher ad servers through DFP and in the market for ad exchanges through AdX,¹²⁷ and that Google has anticompetitively tied those two products together.¹²⁸ Through the acquisition, Google also acquired DoubleClick’s Bid Manager product, which in 2018 became part of DV360, Google’s ad buying tool for large advertisers.¹²⁹ At the time of the DoubleClick acquisition, Google stated that “the combination of the two companies will accelerate the adoption of Google’s innovative advances in display advertising.”¹³⁰ In hindsight, the acquisition turned out to be a key piece of Google’s overall success. Timothy Armstrong, a former Google executive involved in the DoubleClick acquisition, stated that the deal was “a total game changer, a crucial piece in the larger jigsaw puzzle Google put together.”¹³¹ Brian O’Kelley, founder of AppNexus, stated, “had DoubleClick not gone to Google,” he said, “it’s not clear that Google would have been the power it became — certainly not as easily.”¹³² William E. Kovacic, former FTC Commissioner, stated “If I knew in 2007 what I know now, I would have voted to challenge the DoubleClick acquisition.”¹³³

67. Additionally, as stated in my Opening Report, Google’s DTPA misconducts provided funds which could be used for additional employees, improvements in technology, or to

¹²⁶ “Introducing Google Ad Manager,” Google Blog, June 27, 2018, available at <https://blog.google/products/admanager/introducing-google-ad-manager/>, accessed 8/21/2024.

¹²⁷ Gans Report, § V.C § V.D, and § VI.

¹²⁸ Gans Report, § VI.

¹²⁹ “Introducing Google Marketing Platform,” Google Blog, June 27, 2018, available at <https://blog.google/products/marketingplatform/360/introducing-google-marketing-platform/>, accessed 8/21/2024.

¹³⁰ “Google to Acquire DoubleClick,” Google Press Release, April 13, 2007.

¹³¹ “This Deal Helped Turn Google Into an Ad Powerhouse. Is That a Problem?” *The New York Times*, September 21, 2020.

¹³² “This Deal Helped Turn Google Into an Ad Powerhouse. Is That a Problem?” *The New York Times*, September 21, 2020.

¹³³ “This Deal Helped Turn Google Into an Ad Powerhouse. Is That a Problem?” *The New York Times*, September 21, 2020.

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improve the company's relative position in the industry, including by funding acquisitions.¹³⁴ Professor Wiggins suggests that Google's "modest incremental profits" "likely did not enhance Google's ability to invest in employees and technology."¹³⁵ However, Professor Wiggins' contention that Google derived only "modest incremental profits" from its misconduct is based on his own flawed analysis of direct profits discussed elsewhere in this report. Moreover, as stated in the report of Professor Wiggins' fellow defendant expert Douglas Skinner, "Based on recent public disclosures, including its second quarter 2024 earnings results and call with investors, the Company has made and will continue to make substantial investments in AI infrastructure and capabilities," citing servers, network equipment, and data centers as particular areas of investment.¹³⁶ An overlooked consideration is how such long-term investments, made possible in part by the alleged DTPA misconduct, impacted the company's short-term profitability, and will continue to affect the company's profitability into the future.

68. Finally, the Wiggins Report questions the notion that any benefit to Google from RPO, DRS, and Project Bernanke could increase AdX win rates and revenue.¹³⁷ Professor Wiggins posits that "because of advertiser and publisher learning and experimentation the alleged deception was unlikely to impact auction outcomes."¹³⁸ However, his opinions vis-à-vis advertiser and publisher learning and experimentation amount to little more than speculation, and overlook the fact that Google has and continues to externalize the costs of its deception, shifting those costs to advertisers and publishers.

¹³⁴ Andrien Opening Report, ¶111.

¹³⁵ Wiggins Report, ¶263.

¹³⁶ Skinner Report, ¶69.

¹³⁷ Wiggins Report, ¶264.

¹³⁸ Wiggins Report, ¶266.

69. Evidence demonstrates the difficulty that competitors now face in trying to compete with Google's dominant display advertising position, which Google gained through its scheme to dominate the market, including through the DTPA misconducts. [REDACTED]

70. Thus, for all of the above reasons, the Wiggins Report misses the larger point, that the alleged DTPA misconducts alleged in this case are properly viewed as part of an *overall scheme* by Google to dominate and maintain its place in the display advertising industry using various levers at its disposal, *including the DTPA misconduct at issue*. Google's operating profit in display advertising does not even remotely represent the benefits to Google's positioning gained through its scheme, including the DTPA misconducts. The interconnectedness of Google's misconduct necessitates a holistic analysis accounting for the indirect benefits of the behavior, as I have

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undertaken, to determine reasonable and appropriate deceptive trade practices civil penalties, sufficient to deter future misconduct.

c. Google's Revenue is a Relevant Measure to Consider in Determining Appropriate Civil Penalties

71. The Wiggins Report argues that I wrongly base my estimation of civil penalties on display advertising revenue rather than incremental profit. As I discuss at length above, while profit is useful to consider, in order to meet the burden of deterrence and considering the indirect and future benefit that Google derives from its conduct, the profit of Google's display advertising segment is wholly insufficient in isolation to determine the appropriate level of penalties. Here, and in my Opening Report, I consider the revenue and profit of Google's display advertising segment, as well as the revenue and profit of Google as a whole in forming my opinions.

72. In addition to arguing that display advertising revenue is the wrong measure to consider, the Wiggins Report also criticizes my calculation of Google's display advertising revenue. Professor Wiggins argues that my inclusion of revenue from AdMob, AdSense for Content, and Campaign Manager, as well as DV360 revenue from third party exchanges, is inappropriate.¹⁴² I disagree.

73. As a preliminary matter, in its First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Google itself states, "[f]or the avoidance of doubt, Google will construe the term 'Ad Tech Products' to include the following Google products: Google Ads (solely as used for the purchase of display advertising, not search ad inventory), Display & Video 360, Campaign Manager, AdSense for Content (but not, for the avoidance of doubt, AdSense for Search), AdMob, and Google Ad Manager."¹⁴³ Google's internal documents also list the products

¹⁴² Wiggins Report, ¶112.

¹⁴³ Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, May 24, 2024, p. 4.

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that fall under Google’s core display business – this list includes AdMob, AdSense for Content, and Campaign Manager.¹⁴⁴ One of Google’s internal documents explains that the “[REDACTED]

[REDACTED]” and further states that Google’s strategy has been “[REDACTED]

[REDACTED]”¹⁴⁵ For example, Campaign Manager is an ad management tool for advertisers that “includes integrations with other Google products.”¹⁴⁶ Google documents show that Campaign Manager users also use DV360 as a demand side platform, and that “[REDACTED]

[REDACTED]”¹⁴⁷ The same document also shows that DV360 is a demand source for AdX, AdMob, and AdSense for Content.¹⁴⁸ Thus, Google’s entire suite of display advertising products work together and are leveraged as part of a larger strategy to dominate across the ad tech stack. While I only count violations based on the number of Open Auction transactions in the AdX data, when evaluating the benefits to Google of its deceptive behavior, I consider not just the incremental profit of the specific auction programs implemented by Google, but on the larger benefit Google gained from its display advertising business, and further, the role that their dominance in display advertising played in their success overall.

¹⁴⁴ GOOG-AT-MDL-002189396 at -400.

¹⁴⁵ GOOG-AT-MDL-001057220 at -247-248.

¹⁴⁶ “Introducing Campaign Manager 360,” Google Blog, available at <https://support.google.com/campaignmanager/answer/10157783?hl=en>, accessed 8/22/2024.

¹⁴⁷ GOOG-AT-MDL-001057220 at -248, -250.

¹⁴⁸ GOOG-AT-MDL-001057220 at -250. *See also* GOOG-NE-02633839 at -844, a Google presentation from March 2017 showing that “AdX Buyers” contributed to AdMob’s revenue in [REDACTED] and that AdX’s contribution to AdMob revenue [REDACTED].

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74. Furthermore, there is evidence that in-app transactions were also the target of Google's deceptive behavior. An internal email chain from April 2017 discusses the plan to

[REDACTED]

[REDACTED]¹⁴⁹ A Google presentation from August 2018 [REDACTED]

[REDACTED]

[REDACTED]¹⁵⁰ [REDACTED]

[REDACTED]

[REDACTED] Yet another Google presentation states that

Google is "[REDACTED]

[REDACTED]"¹⁵² [REDACTED]

[REDACTED] "[REDACTED]

[REDACTED]

[REDACTED]"¹⁵³ Each of these documents provides evidence that Google's deceptive behavior is also targeted at AdMob and thus I include AdMob revenue in considered the benefit Google gained from its deceptive behavior.

D. The Wiggins Report's Claims that Google's History of Prior Violations Discussed in my Opening Report is Dissimilar to the Conduct at Issue Here is Incorrect

75. The Wiggins Report claims that "none of [the] examples [of Google's history of past fines and settlements discussed in my Opening Report] involved allegations similar to the alleged deception asserted in this case."¹⁵⁴ I disagree. Professor Wiggins reaches his conclusion

¹⁴⁹ GOOG-NE-07249237 at -237.

¹⁵⁰ GOOG-NE-03730264 at -265.

¹⁵¹ GOOG-DOJ-15971437 at -454.

¹⁵² GOOG-NE-13236353 at -379.

¹⁵³ GOOG-DOJ-AT-02218994 at -996. This document also goes on to describe "[REDACTED]" and "[REDACTED]" iterations of the program.

¹⁵⁴ Wiggins Report, ¶20.

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by proposing several reasons that purportedly undermine the relevance of the approximately \$17 billion in fines and settlements paid by Google between 2013 and 2023.¹⁵⁵ However, none of these reasons undermine the relevance of these fines and settlements, which establish that Google has a history of: (i) deceiving its customers (consumers and businesses) and regulators;¹⁵⁶ and (ii) engaging in anticompetitive practices.¹⁵⁷ As I discuss below, Professor Wiggins' assertions are

¹⁵⁵ Wiggins Report, ¶273 and Table 6; Proposed Complaint in the *Matter of Alphabet, Inc.* as proposed by Kenneth Glueck, Oracle of Americas, Inc., May 8, 2023.

¹⁵⁶ Proposed Complaint in the *Matter of Alphabet, Inc.* as proposed by Kenneth Glueck, Oracle of Americas, Inc., May 8, 2023; "Google Will Pay \$22.5 Million to Settle FTC Charges it Misrepresented Privacy Assurances to Users of Apple's Safari Internet Browser," FTC, August 9, 2012, available at <https://www.ftc.gov/news-events/news/press-releases/2012/08/google-will-pay-225-million-settle-ftc-charges-it-misrepresented-privacy-assurances-users-apples>, accessed 8/20/24; "Google to Pay \$17 Million to Settle Privacy Case," The New York Times, November 18, 2013, available at <https://www.nytimes.com/2013/11/19/technology/google-to-pay-17-million-to-settle-privacy-case.html>, accessed 8/20/2024; "Google and YouTube Will Pay Record \$170 Million for Alleged Violations of Children's Privacy Law," FTC, September 4, 2019, available at <https://www.ftc.gov/news-events/news/press-releases/2019/09/google-youtube-will-pay-record-170-million-alleged-violations-childrens-privacy-law>, accessed 8/20/2024; "Google pays nearly \$392 million to settle sweeping location-tracking case," NPR, November 14, 2022, available at <https://www.npr.org/2022/11/14/1136521305/google-settlement-location-tracking-data-privacy>, accessed 8/20/2024; "Arizona announces \$85M settlement with Google over user data," Associated Press, October 4, 2022, available at <https://apnews.com/article/technology-business-lawsuits-arizona-440a27f1e7c2c672d3ccc727439978b4#>, accessed 8/20/2024; "Attorney General Todd Rokita secures \$20 million settlement with Google under same Indiana law being used against TikTok," Office of the Indiana Attorney General, December 29, 2022, available at https://events.in.gov/event/attorney_general_todd_rokita_secures_20_million_settlement_with_google_under_same_indiana_law_being_used_against_tiktok, accessed 8/20/2024; "AG Racine Announces Google Must Pay \$9.5 Million for Using 'Dark Patterns' and Deceptive Location Tracking Practices that Invade Users' Privacy," Office of the Attorney General for the District of Columbia, December 30, 2022, available at <https://oag.dc.gov/release/ag-racine-announces-google-must-pay-95-million>, accessed 8/20/2024; "Google LLC to pay \$60 million for misleading representations," Australian Competition & Consumer Commission, August 12, 2022, available at <https://www.accc.gov.au/media-release/google-llc-to-pay-60-million-for-misleading-representations>, accessed 8/20/2024.

¹⁵⁷ Proposed Complaint in the *Matter of Alphabet, Inc.* as proposed by Kenneth Glueck, Oracle of Americas, Inc., May 8, 2023; "Google Settles Russian Antitrust Case on Android Phones," Bloomberg, April 17, 2017, available at <https://www.bloomberg.com/news/articles/2017-04-17/google-settles-russian-antitrust-case-on-android-phones>, accessed 8/21/2024; "Google Fined – This Time by the Turkish Competition Watchdog," Kluwer Competition Law Blog, November 5, 2018, available at <https://competitionlawblog.kluwercompetitionlaw.com/2018/11/05/google-fined-this-time-by-the-turkish-competition-watchdog/>, accessed 8/21/2024; "S. Korea fines Google \$177 mln for blocking Android customization," Reuters, September 14, 2021, available at <https://www.reuters.com/technology/skorean-antitrust-agency-fines-google-177-mln-abusing-market-dominance-2021-09-14/>, accessed 8/21/2024; "Google loses appeal over EU antitrust ruling, but fine cut to \$4.12 billion," CNBC, September 14, 2022, available at <https://www.cnbc.com/2022/09/14/eu-court-backs-antitrust-ruling-against-google-but-reduces-fine.html>, accessed 8/21/2024; "Google fined \$162 mln by India antitrust watchdog for abuse of Android platform," Reuters, October 20, 2022, available at <https://www.reuters.com/world/india/india-competition-regulator-fines-google-16195-mln-anti-competitive-practices-2022-10-20/>, accessed 8/21/2024; "Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service – Factsheet," European Commission, June 27, 2017, available at https://ec.europa.eu/commission/presscorner/detail/en/MEMO_17_1785, accessed 8/21/2024; "Competition

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based on misleading classification of the conduct at issue in those proceedings, as well as certain unsupported and illogical assertions.

76. First, the Wiggins Report attempts to undermine the information as being compiled by a disgruntled competitor. This is nothing but a red herring. Professor Wiggins is correct that this information was not compiled by the FTC itself but was instead compiled by a third-party and filed with the FTC. However, Professor Wiggins does not dispute the contents. In other words, regardless of who prepared the list, Professor Wiggins does not challenge the salient fact shown by the list that Google has, in fact, been subject to the allegations of each respective case/proceeding and has paid those fines and settlements.

77. Fundamental to his conclusion, however, is an analysis purporting to classify the various fines and settlements based on the type of misconduct at issue in those proceedings.¹⁵⁸ Based on this analysis, Professor Wiggins concludes that none of the fines and settlements involved “claims similar to the deceptive conduct alleged in this case,” but rather, were related to “Other claims (e.g. privacy, antitrust).”¹⁵⁹ Professor Wiggins classification of certain fines and settlements as privacy related is misleading.¹⁶⁰ Contrary to Professor Wiggins’ assertions, the settlements he classifies as privacy related include settlements for alleged deceptive conduct that

Commission of India fines Google for abusing dominant position,” Reuters, February 8, 2018, available at <https://www.reuters.com/article/india-google-antitrust-idINKBN1FS29Z/>, accessed 8/21/2024; “Turkey fines Google for abusing dominant position,” Reuters, April 14, 2021, available at <https://www.reuters.com/technology/turkey-fines-google-abusing-dominant-position-2021-04-14/>, accessed 8/21/2024; “Antitrust: Commission fines Google €1.49 billion for abusive practices in online advertising,” European Commission, March 20, 2019, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770, accessed 8/21/2024; “The Autorité de la concurrence hands out a €220 millions fine to Google for favouring its own services in the online advertising sector,” Autorité de la concurrence, June 7, 2021, available at <https://www.autoritedelaconcurrence.fr/en/communiqués-de-presse/autorite-de-la-concurrence-hands-out-eu220-millions-fine-google-favouring-its>, accessed 8/21/2024; “India orders Google to allow third-party payments, slaps on another fine,” Reuters, October 26, 2022, available at <https://www.reuters.com/technology/india-fines-google-113-million-second-antitrust-penalty-this-month-2022-10-25/>, accessed 8/20/2024.

¹⁵⁸ Wiggins Report, ¶273; Table 6.

¹⁵⁹ Wiggins Report, ¶273; Table 6.

¹⁶⁰ Wiggins Report, ¶276.

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dissimilar are related to alleged violations of state or federal deceptive trade practice statutes that are the same as those asserted in this case, or the equivalent versions of different jurisdictions.¹⁷⁷

84. The Wiggins Report also claims that considering these settlements and fines are inconsistent with the framework I used in my Opening Report, which he fundamentally mischaracterizes as being limited to “eliminat[ing] Google’s financial incentive to engage in the misconduct.” But that’s wrong. This false characterization alone invalidates this critique. As detailed above and in my Opening Report, my holistic framework explicitly considers Google’s history of previous similar violations as a factor in assessing the appropriate amount of civil penalties. Additionally, as detailed in my Opening Report, “both the alleged deceptive trade practices misconduct and the separate antitrust conduct alleged in this case play a role within an overall scheme to dominate the display advertising industry.”¹⁷⁸ As such, both conducts are at issue

privacy, accessed 8/28/2024; “FTC, States Sue Google and iHeartMedia for Deceptive Ads Promoting the Pixel 4 Smartphone,” FTC, November 28, 2022, available at <https://www.ftc.gov/news-events/news/press-releases/2022/11/ftc-states-sue-google-iheartmedia-deceptive-ads-promoting-pixel-4-smartphone>, accessed 8/28/2024; “Google to pay \$29.5 million to settle DC, Indiana lawsuits over location tracking,” The Hill, December 31, 2022, available at <https://thehill.com/policy/technology/3794301-google-to-pay-29-5-million-to-settle-dc-indiana-lawsuits-over-location-tracking/>, accessed 8/28/2024; “Google to pay Indiana \$20 million to resolve tracking privacy lawsuit,” PBS News, December 30, 2022, available at <https://www.pbs.org/newshour/economy/google-to-pay-indiana-20-million-to-resolve-tracking-privacy-lawsuit>, accessed 8/28/2024; Complaint for Injunction, Civil Penalties, and Other Equitable Relief in the People of the State of California v. Google, September 14, 2023; Plaintiff’s First Amended Petition in The State of Texas v. Google LLC, filed May 19, 2022.

¹⁷⁷ Draft of Assurance of Voluntary Compliance in the case of States v. Google, available at <https://agportal-s3bucket.s3.amazonaws.com/uploadedfiles/WiFi%20-%20AVC%20-%20Final.pdf>, accessed 8/28/2024; Assurance of Voluntary Compliance in the Matter of Google Inc., November 13, 2013; Complaint for Permanent Injunction, Civil Penalties, and Other Equitable Relief in the Matter of Federal Trade Commission and People of the State of New York v. Google LLC and YouTube LLC, Case No.: 1:19-cv-2642, September 4, 2019; Complaint for Injunctive and Other Relief in the Matter of State of Arizona v. *Google LLC*, Case No: CV 2020-006219, May 27, 2020; Assurance of Voluntary Compliance in the Matter of Commonwealth of Pennsylvania v. Google, LLC, November 10, 2022; Complaint in the Matter of Google LLC, and iHeartMedia, Inc., Docket Nos. C-4783 and C-4784, February 8, 2023; “Settlement Agreement in the Matter of the District of Columbia v. Google LLC,” December 29, 2022; Settlement Agreement in *State of Indiana v. Google LLC*, Cause No. 49D01-2201-PL-002399, December 29, 2022; Plaintiff’s First Amended Petition in the Matter of the State of Texas v. Google LLC, Cause No. 2201-88230-D, May 19, 2022.

¹⁷⁸ Andrien Opening Report, ¶11.

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in this case, and Google's history of prior fines and settlements are also relevant to determining the penalties in this case.

85. Professor Wiggins also claims the settlements that he classifies as privacy related did not involve admissions of liability, and therefore “do not indicate that Google has engaged in any misconduct, much less a similar type of misconduct to what is at issue in this case.”¹⁷⁹ While Google may have settled several proceedings without admitting liability, that does not make these settlements irrelevant for the purposes of determining the statutory penalties in this case. The concept of relative valuation based on observed transactions is well established in finance, is considered one of the three main approaches to valuation (the “Market Approach”).¹⁸⁰ While finding observable transactions involving exactly the same asset or company is not possible, the “standard sought is usually one of reasonable and justifiable similarity,” which is typically attainable.¹⁸¹ Of course, adjustments to the observed transactions to make them more comparable to the subject asset may be necessary.¹⁸² Courts regularly accept this methodology, and I too have submitted several expert reports that include the Market Approach.

86. The application of the Market Approach is not limited to valuation but has also been extended to damages calculations. For example, one factor that is considered in determining reasonable royalty damages in patent cases is “the royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.”¹⁸³ The Federal Circuit approves of reliance on prior patent licenses, which are often not granted in identical

¹⁷⁹ Wiggins Report, ¶275.

¹⁸⁰ Sheridan Titman & John D. Martin, *Valuation: The Art and Science of Corporate Investment Decisions* (Addison Wesley, 2007) p. 215; Shannon Pratt, Robert Reilly, Robert Schweihs, “Valuing A Business,” Third Edition, Chapters 10 and 11.

¹⁸¹ Shannon Pratt, Robert Reilly, Robert Schweihs, “Valuing A Business,” Third Edition, p. 204.

¹⁸² Sheridan Titman & John D. Martin, *Valuation: The Art and Science of Corporate Investment Decisions* (Addison Wesley, 2007), pp. 216 – 220.

¹⁸³ *Georgia-Pacific v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120-21 (S.D. N.Y. 1970), modified and aff'd, 446 F.2d 295 (2d Cir. 1971).

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released RPO blog post states that “the feature [RPO] is not directly visible externally” and notes that “buyers may observe changes... and we will monitor how they react.”²⁸⁵ Another internal document [REDACTED]

[REDACTED]²⁸⁶ The documents make it clear that the blog post did not contain full details on RPO and thus was not a sufficient disclosure, and as such, a test of this incomplete and insufficient blog post’s effect on prices is irrelevant.

g. The Wiggins Report Inappropriately Excludes Transactions That It Claims “Cannot be Affected” by Google’s Misconduct

130. The Wiggins Report argues that I have included “some transactions that could not have been affected by the alleged deception.”²⁸⁷ To support his argument, he contends that RPO and DRsv1 did not apply to Google Ads,²⁸⁸ that DRsv2 did not apply to Google Ads and DV360,²⁸⁹ and that Bernanke *only* applied to Google Ads.²⁹⁰ In doing so, the Wiggins Report ignores the fact that these deceptive programs ran in parallel for much of the period and that auction participants were either in the dark or being fed deceptive and misleading information as to the existence and mechanisms of these programs, including how they potentially interacted with one another. For example, in a Google email chain from 2017, Nitish Korula states “[REDACTED]

²⁸⁵ GOOG-AT-MDL-001391101 at -104.

²⁸⁶ GOOG-AT-MDL-B-004435235 at -245.

²⁸⁷ Wiggins Report, §IV.G.

²⁸⁸ Wiggins Report, ¶¶146,149.

²⁸⁹ Wiggins Report, ¶154.

²⁹⁰ Wiggins Report, ¶157.

²⁹¹ GOOG-DOJ-14162332 at -332 (emphasis added).

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Further, I understand from Dr. Weinberg, as cited above, explained that all auctions during the relevant period were affected, regardless of whether the specific auction was directly touched by a conduct.²⁹²

131. Professor Wiggins goes on to argue that both Alchemist Bernanke²⁹³ and the Facebook NBA impacted zero transactions.²⁹⁴ Professor Wiggins argues that Alchemist was not inconsistent with Google's equal footing representations and that there is no reason to think advertisers and publishers would act differently if Alchemist were disclosed.²⁹⁵ I understand from Dr. Weinberg that Alchemist was deceptive because publishers would have set higher GDN reserves if they knew about the collusive aspect of Alchemist.²⁹⁶

132. Professor Wiggins argues that the Facebook NBA impacted zero transactions because Facebook has not won any transactions following the execution of the NBA.²⁹⁷ Professor Wiggins also contends that [REDACTED] and [REDACTED] argues that I failed to show an increase in match rate.

133. First off, Professor Wiggins bases his conclusion that Facebook won no auctions on an analysis of transactions excluding in-app transactions.²⁹⁸ As I explain above, I do not exclude in-app transactions from my analysis given the evidence that these too were targeted by Google's deceptive misconduct, and as such Professor Wiggins' analysis is too narrow. Using Professor Wiggins' own dataset,²⁹⁹ one can see that there have been over [REDACTED] won

²⁹² See Weinberg Rebuttal Report, §IV.G; Interview with Dr. Matthew Weinberg, September 8, 2024.

²⁹³ Wiggins Report, ¶¶161-163.

²⁹⁴ Wiggins Report, ¶¶164-165.

²⁹⁵ Wiggins Report, ¶¶161-163.

²⁹⁶ Weinberg Rebuttal Report, §IV.C; Interview with Dr. Matthew Weinberg, September 8, 2024.

²⁹⁷ Wiggins Report, ¶¶164-165.

²⁹⁸ Wiggins Report, ¶165, footnote 349.

²⁹⁹ See Wiggins Report backup file "FAN_OA_OB".

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V. CONCLUSION

166. In summary, based upon the factors I have considered and the analyses I have performed, I conclude that the critiques presented in the Wiggins Report and the Skinner Report are unfounded and do not cause me to change my overarching conclusions regarding the amount of appropriate penalties due to Google's deceptive misconducts. I find that the appropriate amount of penalties should be no less than the lower bounds for total penalties as presented in my Opening Report, and a reasonable juror could decide that that the appropriate penalty may exceed the higher bounds for total penalties as presented in my Opening Report.

September 9, 2024



Jeffrey S. Andrien

HIGHLY CONFIDENTIAL**UPDATED OPENING
REPORT EXHIBIT 5****Annual Count by DTPA Violation Sub-Periods for All Open Auctions Related to Plaintiff States
2013 - 2024***in billions*

DTPA Violation	Period Start	Period End	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total Count
DRS v1	8/20/2015	12/1/2016			381	1,249									1,630
DRS v2	12/1/2016	7/17/2018				127	1,864	1,053							3,043
Second-Price Bernanke	11/11/2013	10/25/2019	57	811	1,062	1,376	1,864	2,238	2,089						9,496
First-Price Bernanke	10/25/2019	present							525	3,868	4,311	4,282	4,313	1,797	19,096

Notes: Data spans June 2013-March 2023. For First-Price Bernanke, data is extended through the end of May 2024 assuming that the count of auctions in each month for the period April 2023 to May 2024 is equal to the average count of auctions during the first three months of 2023. Total counts are equal to matched queries through AdX and Open Bidding filtered to "transaction_type_name" = "OA - Open Auction" between "Period Start" and "Period End" multiplied by ratio of Plaintiff States internet population to U.S. internet population between "Period Start" and "Period End". AdX data is available monthly: if "Period Start" is after the first day of the month, violation count starts on the first day of the following month; if "Period End" is after the first day of the month, violation count ends on the last day of the previous month. As a result, sum of total counts for Second-Price Bernanke and First-Price Bernanke does not equal the total count for Bernanke in Updated Opening Report Table 2.

Sources: GOOG-AT-MDL-DATA-000066537-482007; GOOG-AT-MDL-DATA-000508827-58886; Updated Opening Report Exhibit 1.

"Period Start" and "Period End" are assumed based on sources listed below.

DRS v1:

Period Start: Date of DRS v1 launch per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.

Period End: Date of DRS v2 launch per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.; GOOG-AT-MDL-B-004377628 at -759 and -761 (December 6, 2016 Google internal notes with subject "Indirect and Ad Serving bi-weekly update" states "LAUNCHED: DRS v2 to 100%").

DRS v2:

Period Start: Date of DRS v2 launch per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.; GOOG-AT-MDL-B-004377628 at -759 and -761 (December 6, 2016 Google internal notes with subject "Indirect and Ad Serving bi-weekly update" states "LAUNCHED: DRS v2 to 100%").

Period End: Date of tDRS launch per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOG-DOJ-13949282 at tab "Q3Q4 2018" row 7.

Second-Price Bernanke:

Period Start: Date of full launch per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOG-DOJ-28386151 at -165 (December 10, 2013 internal Google presentation titled "Project Bernanke" states "Fully launched on 2013-11-11").

Period End: Date of launch of Bernanke compatible with Ad Manager's first-price auction (sometimes known as "Alchemist") per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.

First-Price Bernanke:

Period Start: Date of launch of Bernanke compatible with Ad Manager's first-price auction (sometimes known as "Alchemist") per Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.

Period End: Assumed to be ongoing.